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ABSTRACT

The Second Annual Federal Forecasters Conference, "Forecasting and Public Policy", provided a forum where forecasters from various Federal agencies could meet and discuss aspects of forecasting in the U.S. Government. A total of 140 forecasters from 42 Federal agencies and other organizations attended the conference. Opening remarks by Co-Chairs W. C. Sonnenberg, D. E. Gerald, S. Ahmed, and B. V. Manno are summarized. The keynote speech, "Program Projection in a Dynamic Environment", by Major General W. H. Reno; and the featured speech, "Importance of Forecasting to Budget Policy", by R. G. Penner of the Urban Institute are presented. Brief summaries are included for the following panel discussions and accompanying papers: (1) "Overview of Projection Activities at Federal Agencies" (panel); (2) "Lessons from Strategic Planning in Federal Agencies" (panel); (3) "Small-Area Projections" (panel); (4) "GRAF-FIX" (D. G. Hackmann); (5) "Small-Area Projections at Bureau of Economic Analysis" (K. Johnson); (6) "Forecast Evaluation" (panel); (7) "Useful Criteria to Select Which Forecast or Estimation Method Is Better" (B. Klugh, Jr.); (8) "Evaluating Macroeconomic Forecasts" (H. O. Stekler); (9) "Forecasting Techniques" (panel); (10) "Traffic Forecasting" (P. I. Hazen); (11) "Forecasting Postal Mail Volumes" (J. B. Cohen); (12) "Forecasting and Public Policy" (panel); (13) "Forecasting and Policy Analysis" (T. Su); (14) "Forecasting Age-Related Disability: Ramifications for Public Policy" (S. C. Brown); (15) "Immigration Policy Issues" (E. M. Larson); (16) "Forecast Accuracy" (panel); (17) "Forecast Accuracy of U.S. Public School Enrollment Projections by State" (D. Gerald and W. C. Sonnenberg); (18) "The Accuracy of National Population Projections by Age" (J. F. Long); (19) "Econometric Models" (panel); (20) "The Development of a Small Multicountry Macroeconomic Model" (J. R. Malley); (21) "Bureau of Health Profession's Econometric Model of the Dental Sector" (G. L. Bronstein and H. Traxler); (22) "Forecasting Models" (panel); (23) "PCAEO Model" (M. D. Lehr); (24) "The Treasury Estate Tax Micro-Simulation Model" (D. Joulfaian); (25) "Forecasting in Federal Agencies: How Long Is the Chain?" (panel); (26) "Manpower Planning" (panel); (27) "Supply and Demand of New Science and Engineering Ph.D.'s" (E. Collins); and (28) "Physician Manpower Planning" (J. Katzoff and J. Cultice). The conference agenda is provided, and participants' names and addresses are listed. A bibliography of 68 Federal forecasting publications is included. (SLD)

NATIONAL CENTER FOR EDUCATION STATISTICS

Conference Report

July 1990

Proceedings of the Second Annual Federal Forecasters Conference

U.S. Department of Education
Office of Educational Research and Improvement

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NATIONAL CENTER FOR EDUCATION STATISTICS

Conference Report July 1990

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September 6, 1989

Sponsored by the
National Center for Education Statistics

William Sonnenberg, Conference Chair
Debra Gerald
Paul J. Horn
William Hussar

U.S. Department of Education
Office of Educational Research and Improvement NCES 90-682

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"The purpose of the Center shall be to collect, and analyze, and disseminate statistics and other data related to education in the United States and in other nations."—Section 406(b) of the General Education Provisions Act, as amended (20 U.S.C. 1221e–1).

July 1990

Preface

In the tradition of the first meeting of Federal forecasters in Washington, D.C., in 1988, the Second Annual Federal Forecasters Conference (FFC 89) held on September 6 and 7, 1989, in Washington, D.C., provided a forum where forecasters from Federal agencies could meet and discuss various aspects of forecasting in the United States Government. The theme was "Forecasting and Public Policy," and it highlighted our roles as developers of forecasts for policy planning.

One hundred and forty forecasters representing 42 different Federal agencies and other organizations with similar interests attended the 2-day conference. The program included remarks by the then-Acting Assistant Secretary of Educational Research and Improvement, Bruno V. Manno, U.S. Department of Education, and officials from the National Center for Education Statistics, Department of Education; and keynote speeches by Major General William H. Reno of the United States Army and Rudolph G. Penner of the Urban Institute (and former director of the Congressional Budget Office). In addition, presentations were made by experts from the Federal Government on such topics as strategic planning, small-area projections, forecast evaluation, forecasting techniques, econometric models, and forecasting and public policy.

This publication provides a summary of the program.

Acknowledgments

Many individuals contributed to the success of the Second Annual Federal Forecasters Conference. William C. Sonnenberg and Debra E. Gerald served as co-chairs and were responsible for planning and organizing the conference. Paul J. Horn designed the 1989 conference logo and conference folder, and served as editor of the conference newsletter, *Federal Forecasters Outlook*. William J. Hussar organized the conference exhibit area, which displayed forecasting publications of the U.S. Government. The conference was conducted under the general direction of Thomas D. Snyder.

The outstanding contributions of the FFC 89 organizing committee are gratefully acknowledged. Kenneth Johnson of the Bureau of Economic Analysis, Ralph Monaco of the Economic Research Service, and Stuart Bernstein of the Bureau of Health Professions were instrumental in locating forecasters in other Federal agencies and soliciting their participation. Naomi Verdugo of the Army Research Institute was instrumental in securing the keynote speaker, Maj. Gen. William H. Reno. Members of the FFC 89 staff also contributed to the overall success of the conference. Thomas D. Snyder and Henry Gordon served as chairs of concurrent sessions. Charlene Hoffman monitored conference registration. Celeste Loar and Jacqueline O'Neil staffed the exhibit. Lisa Avallone reviewed the conference materials. Celestine Davis helped prepare conference materials and did the mailings.

The efforts of these individuals and the participation of the Federal Forecasters in FFC 89 made the conference a successful event.

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Opening Remarks

Co-chair William C. Sonnenberg opened the conference by welcoming participants representing more than 40 Federal executive and legislative agencies across the United States. He expressed pleasure at the increase over last year's attendance and highlighted the diversity of agencies and groups attending the current conference.

Mr. Sonnenberg thanked everyone for making the conference possible: the forecasters themselves; the Organizing Committee, which developed materials for the conference and located forecasters in the Federal Government; the distinguished guests at the conference: Dr. Bruno V. Manno, then-Acting Assistant Secretary for Educational Research and Improvement (now Deputy Assistant Secretary for Policy and Planning); Maj. Gen. William H. Reno of the United States Army; and Dr. Rudolph G. Penner of the Urban Institute, formerly director of the Congressional Budget Office.

Mr. Sonnenberg urged the forecasters to fill out the Call for Forecasters, a form for identifying other Federal forecasters who may not be aware of the conferences. He also encouraged them to visit the exhibit of forecasting publications of the United States Government and thanked the contributors for sharing their publications with conference participants.

Co-chair Debra E. Gerald related how the Federal Forecasters Conference began with a conversation between two forecasters on the difficulty of finding information in the Federal Government on forecasting topics. This conversation led the National Center for Education Statistics to initiate a project to locate Federal forecasters and bring them together.

The theme for this year's conference emphasizes that forecasts are used by policy makers for planning ways to meet national needs in education, health, the environment, defense, agricultural production, budget, and finance. She expressed hope that the conference would lead to a Federal Forecasters Network, where forecasters can share information and seek solutions to common forecasting problems.

Susan Ahmed, from the National Center for Education Statistics, Office of the Commissioner, said that she was impressed with the dedication of people at the center involved in improving statistical methodology for Government surveys. She further commented that we have already begun to achieve some of the objectives that we set for this conference—"that is, to develop a group of forecasters who would continue to tell one another about the existence of the group and to exchange ideas. We have grown two to three times this year over last year, and we have expanded the number of agencies that are represented."

She noted that it was interesting to look down the list of agencies represented at the conference, and observed that although we all share this common interest in forecasting, our areas of application are quite diverse.

The focus here at the conference was on forecasting and public policy. "We do have two very distinguished keynote speakers with us who will be discussing, from their point of view, being involved in Federal policy and the formation of public policy, their uses of forecasting data and some of the problems they come across as they try to use our data for performing public policy."

Dr. Manno welcomed the participants on behalf of the Secretary as well as the Office of Educational Research and Improvement, and thanked the National Center for Education Statistics for sponsoring this second forecasters' conference.

Dr. Manno said that, from his perspective, Federal forecasting is an important business, and projections form an important part of the foundation for public policy. "Whatever else it is, I have come to think of it [public policy] as also a leap of faith in a variety of ways. Policy decisions are invariably based on forecasts about the future.

"For example, what changes will the United States see in elementary and secondary student involvement? How many teachers will be needed in America's schools? What kinds of teachers? How many graduates will our high schools produce? How many college degrees will be earned?

"More importantly, [this conference] will determine the degree to which the Federal forecasting infrastructure can grow stronger, more precise, more flexible, and more useful to policy makers and other Americans. That finally, I think, is the measure of the significance of your work—how it gets used."

Program Projection in a Dynamic Environment

(Keynote Speech)

Major General William H. Reno
United States Army

"My job in the Army, very simply put, is: I am responsible as the Army's programmer for building what we call the Army Program . . . that is, . . . the construct of the total Army, all of its force structure, its R&D programs, its procurement programs, its manpower programs, its training and the like, the definition of all the resources that we commit to those functions, and the integration of all those functions."

With these remarks, keynote speaker Major General William Reno began his address, following it with 40 minutes of commentary highlighting the Army's dependence on accurate, timely forecasts of a wide range of topics—everything from the future of the economy to the future of technology.

"That sounds like a very tough job. It is a very tough job, particularly in a period of declining resources." What makes this job so tough? General Reno explained. "First, in the military, particularly as we build our program and budget—what we predict and what we project in our programs become self-fulfilling prophecies."

General Reno noted that there are problems with using forecasts due to the lack of confirmed accuracy of those forecasts. He pointed to the specific inflation projections done by the Office of Management and Budget. These particular forecasts are, as General Reno describes them, "directed statistics." The problem with using these forecasts is exemplified by the use of inflation rates. "[W]hen one programs against that and sizes an Army, and makes commitments towards procurement, and makes commitments towards research and development and manpower programs, and the like, we then get to the year of execution, and the program dollars are not there to buy them because they have been consumed by inflation that is not factored accurately under a program." At another junction, General Reno reiterated this point when he said that "if you look out to the year 1994, and if our compounded inflation rates are off by 5 or 6 percent, that will have a $5 billion order-of-magnitude swing of dollars in what I have to program in 1994."

General Reno emphasized the importance of long-range planning. "Planning is something we do not do very well in either the public or private sector in my judgment. Long-range planning is very difficult for us. We, the leaders of organizations, are very uncomfortable with long-range planning. The reason that we are uncomfortable is, because as you get further out in time, data become less precise. As leaders and managers, we then have to assume risks that we are uncomfortable with taking."

General Reno indicated that the long-range planning he was talking about covered a 30-year period. "We look out 30 years. Our next step function back, our next subset, is 15 years. We have to be reasonably precise at 15 years. We need to know where we are going in the international arena out to 30 years. . . . We have to have sufficient resolution as we walk back to 15 to start programming and shaping events for that. How do we accomplish such planning? First, we must clearly understand the mission of our agency. How many of you understand the vision of your agency? How many of you understand what your agency ought to look like in the year 2000? Think about that, because that is what I have to shape as the programmer for the Army."

Once one understands the mission of the U.S. Army, what tools does the Army need to program to the year 2015? "We're equally interested in economic, demographic, and educational projections over the same time frame. Economic projections will suggest the resources bands in which we will work. Technology projections suggest to us the thrust that will give us a competitive advantage over potential adversaries. Educational projections will tell us the quality of the soldier that society will present to us in the year 2020. . . . If I am to link R&D with the quality of the soldier in the year 2015, I need to know how to design the equipment to accommodate the quality of the youngster that [the American people are] going to present to the Army in that year."

As to the changing environment in which the Army program exists, General Reno referred to the effects of both long-range and short-term shifts in policy. He provided examples of how he must adjust to such changes as the recent effort at parity of forces in Europe and the anticipated reduction in forces in Korea. "I guess that, as forecasters, you probably would not like the term, but we have to do a very good job of 'reading the tea leaves,' internationally, domestically, in Congress, and the like. That is tough. . . . Underlying these dynamics, in the final analysis, is the bottom line."

General Reno then spent some time discussing the necessity to project the kind of forces that we will require, keeping in mind the need to project who the enemy might be and how the enemy may look in 30 years. He then discussed in some detail the way the Army minutely addresses various issues of such planning, e.g., structuring, shaping, equipping, and manning. He also addressed the issue of training; such training would include both the traditional military training and the high-tech training. In particular, General Reno spent time noting the cost of new developments in high-tech, commenting, "Software costs are eating our lunch."

General Reno challenged the forecasters to examine their agencies as he does the Army. "Now, I ask you: Are you, inside your own agencies, looking at the skill requirements that you will require in your own positions in the year 2000 and beyond? You probably have not."

Finally, General Reno spoke of sustaining the Army. For example, in time of war, each day costs about "$2.2 billion for fuel, parts, ammunition, and replacement items."

General Reno did assure us that, despite all his concerns about potential problems in the Army's programming efforts, "We have an extraordinarily well-trained Army. The young men and women of your Army are just outstanding. Over 90 percent are high school graduates. Over 60 percent are in the top 50 percent of the middle category in IQ. So, we get better than a cross-section of America. Of the lower 26 percent intellectually in America, we only take 4 percent of our recruited force from that group."

In summary, General Reno stated that forecasting was essential to the Army's and the nation's future. "All of your input is feeding that. There is a synergy of accuracy or a synergy of error. I am not going to ask you which, because it is your data. Our models and what you do as forecasters have a profound impact on our requirements determination and, hence, how we build our program and what we build."

He went on to say, "I do not know whether as a programmer, I am a forecaster or not. Maybe I am a gambler because I am gambling on the accuracy of your projections. Unlike forecasters, when we build a program, we are trying to shape events, not only respond to them . . . We rely extensively on the expertise and talent such as yours. Ultimately, the quality of our program depends on the rigor of our analysis, the quality of what we feed into it (which comes from you and agencies such as yours), and the degree to which we can integrate it so that we buy the right complement of things to put on the ground in 15 years that will meet the national requirements for a trained and ready, strategically based, strategically deployable Army to meet the missions that the National Command Authority would assign to us. . . . It is not easy, but we certainly couldn't come as close to doing it, as I think we do, without the support of organizations, and talents, and the skills and the work that you do."

General Reno then thanked the National Center for Education Statistics for inviting him to participate at the conference. And, indeed, he did set a construct that the forecasters debated and talked to for the next 2 days, as he suggested, leaving them with the challenge of his words, the inspiration of his vigor, and the clarity of his thought.

Importance of Forecasting to Budget Policy

(Featured Speech)

Rudolph G. Penner, Senior Fellow
The Urban Institute

"Life is always difficult for forecasters. And for those who have been forecasting the macroeconomy recently, recent revisions in data have really changed the way the economy looks. Consequently, we cannot even seem to forecast the past anymore. So it is not surprising that forecasters are often ridiculed. It is not one of the most admired professions in our country. But it is, it seems to me, one of life's most interesting paradoxes that the more economists and their forecasts are ridiculed, the more politicians seem to give them immense power in the budget process. And there is a fundamental sense in which politicians cannot escape this paradox because budgeting, by definition, involves the future, and you cannot do it without some sense of future conditions. . . . Forecasting is absolutely crucial to budgeting at both the macro and the micro program level."

After these opening remarks to his featured address, Dr. Penner continued his speech, with commentary on the importance of some of the issues he faced when he was director of the Congressional Budget Office (CBO).

"At the macro level, even before the much feared Gramm-Rudman [legislation] . . . the budget process involved setting targets for outlays, receipts, and the deficit. And the problem is, of course, that all of those things are enormously sensitive to economic conditions. And while I think most economists know that in the abstract, unless you really work with budgets it is very hard to have an intuitive understanding of how important that fact is.

"At a superficial level, of course, it's obvious. Unemployment insurance outlays depend on a forecast of unemployment; somewhat less obviously, Social Security outlays are very sensitive to economic conditions because people tend to retire earlier if labor markets are bad.

"Forecasts of inflation, of course, are crucial to the cost of indexing in various programs, such as Social Security, food stamps, and school lunches. And, of course, the interest bill on the debt is very sensitive to what you assume for interest rates.

"One of the plagues of doing budget forecasts is that even if you are right on all of these economic variables,—and, of course, you never are—there are still huge opportunities to be wrong because of what budget forecasters call technical factors. So although economic conditions may determine how many people are eligible, say, for food stamps, you still have to make a judgment as to how much of the eligible population will actually apply.

"And, of course, in important areas of the budget there are other factors that determine outlays. In agricultural programs, it is crop yields that are important. A budget forecaster implicitly becomes a weather forecaster before the estimates are done. To determine the cost of disaster assistance, you have to forecast the number of earthquakes, hurricanes, etc."

Dr. Penner continued with a look at Congress' record in the budget process. He said, "When you look at the record of forecasting errors, it is pretty horrifying. Between 1980 and 1986, the discrepancy caused by errors in the economic projections between what these budget aggregates were forecast to be at the time the budget resolution was passed, and what they actually turned out to be, you will find that the mean absolute error made consistently in an optimistic direction was $24 billion for the deficit estimate. Technical assumptions contributed an error of $15 billion. There the optimistic bias was not as extreme.

"Now, this creates a terrible anomaly in formulating budget plans. To an economist, a $10 billion change in the forecast of next year's deficit is a minor statistical event. It is a small part of the average error in a forecast. To a politician, having to raise taxes by $10 billion or cut programs by $10 billion to achieve a given deficit target is a major political event."

"Now, as if forecasting was not important enough before Gramm-Rudman, Gramm-Rudman has raised it to paramount status. The Congress has become a slave of numerology. The target now is very precise for a deficit. The penalty for not making that target is extraordinarily severe: the so-called sequestration of funds. And in theory, given Gramm-Rudman, if a sequester occurs, you can directly translate the economists' forecast of, say, a 10-basis-point change in interest rates to several thousand people being fired in the military and civil service.

"Obviously, when a forecast takes on that much power, the politicians are going to mess with it more. And it is going to be more constrained than in situations where it has less power.

"Originally in Gramm-Rudman, the law shared responsibility between the CBO and the Office of Management and Budget (OMB) for this extraordinarily crucial forecast that determined how much you had to do to avoid a sequester, and how much a sequester would do to you if you did not quite make the target. The Supreme Court, of course, decided that we at CBO were unconstitutional. The law then gave to the Administration the power to develop the forecasts used for the purposes of administering Gramm-Rudman.

"In administering Gramm-Rudman under the new procedures, OMB has been quite responsible. This year it developed a forecast that has made it a little tough for the Congress to avoid a sequester, but not so tough as to make it impossible."

Dr. Penner noted that there is more discussion regarding a sequester for the next fiscal year. He said, "I hear more talk of sequester on the Hill for fiscal 1990 than I would have ever believed possible. But that is not because OMB built a particularly high hurdle for them to jump across. It is because they cannot seem to do any jumping at all these days. And in the whole history of Gramm-Rudman, excepting 1986, when a sequester was required by law, we have never had one—which is instructive—and we have never made the targets either, which is also instructive. So, where a forecast in theory has immense power, clearly it has been shaped in a very particular way."

After this discussion of macroeconomic forecasts, Dr. Penner delivered remarks on micro forecasts. "I think that most of the people in this room probably do not get into that [macroeconomic forecasts] very much and are more interested in micro program forecasts. And there, too, forecasts, at least those made by CBO, have enormous power in the budget process. Indeed, as CBO director, I always felt very uneasy with the power conveyed by the law to CBO that requires a CBO cost projection 5 years out for any bill reported from committee. Although it does not have much significance, the law also requires an estimate of the extent to which that bill may impose costs on State and local governments. That latter provision has never had any policy influence at all that I can identify. But the former has immense policy influence because of the way that the budget process sets targets for total outlays, receipts, etc.

"The total target for outlays is distributed among committees. The Appropriations Committee then takes its allocation and distributes it among its subcommittees. That is their target for outlays. And if they want to fit a new program into that target, whether or not it fits depends on the CBO cost estimate. And so CBO can often destroy a program if the cost estimate is too high, or let one through inadvertently if the cost estimate is too low. And sometimes it is a matter of a very few hundreds of millions of dollars as to whether a program fits or not. That made me very uneasy because I knew that our estimate might be off by a billion and yet a difference of $200 million might determine whether a program lived or died.

"But who better to make such estimates than trained analysts if you have to do it at all? You know that if the Congress did it themselves, it would not necessarily be off by $1 billion, but there probably would be a tendency to underestimate by four, five, or six billion dollars. But, still it makes me very uneasy for forecasters to have that much power."

Dr. Penner then added to his original remarks on macro forecasts. "Returning to the macro area, where I described how much power the forecasts have and how the Congress and the Administration have an enormous temptation to be too optimistic, I thought for many years about possible solutions to this problem. Is there some way that one could: (a) reduce the power of analysts somewhat; and (b) reduce the temptation for the Congress

to take what the analyst does and push it into an optimistic direction. I have never really come up with a satisfactory answer. At one point in my career in the early 1980s, I thought the answer at the macro level was simply to make the forecast more arbitrary.

"We are [not very good] macro forecasters. That has to be admitted. Maybe one should just simply present the Congress with trend lines, just extrapolate from where we have been, say, in the last 5 years. In the budget process, it really is not that important that the forecast be accurate as long as you have one as a starting point. Then the Congress can decide on its targets, given that forecast."

"So, in concept at least, a little arbitrariness is not all that bad, but I very quickly decided that would be an absurd way to go. I made that recommendation at a particularly unfortunate time. I made it in the early 1980s, when inflation had been very high. If you had simply, mindlessly projected that inflation rate out for the middle 1980s, you would have had an absurdly inaccurate set of projections on which to base the budget. And, in fact, as bad as macro forecasts are, in that period they were very much better than simple mindless projections."

In closing, Dr. Penner shared his ideas on collaborative ways to produce forecasts. "We might do what they do at the state level very often, and that is to appoint an outside group of experts to condone a particular forecast on which revenue estimates are based. The basic point would be to give a particular forecast a kind of moral content and try to reduce the politicians' temptation to alter it in any way. I do not know how that would work at the Federal level. Again, I seem to make these recommendations at unfortunate times. The year I made that one was a year in which overly optimistic forecasts at the state level were made all over the country, often because of an assumption that the capital gains bonanza that we had when we reformed the tax law would continue. Every economist should have known that it would not.

"So there are problems with any kind of solution. And at the Federal level, of course, the first question would be: Who would appoint this board and would it truly be nonpartisan and respectable? And given that it took 2 years for the Congress to appoint my successor, it may be several centuries before they could put a board like this together. So I am not sure that there is really any solution to the dilemma that I described."

General Session

Overview of Projection Activities at Federal Agencies

Chair: Hal Wallach, U.S. General Accounting Office

Participants: Signe Wetrogan, Bureau of the Census, U.S. Department of Commerce

Lynne Heltman, U.S. Department of Veterans Affairs

Stuart Bernstein, Bureau of Health Professions, U.S. Department of Health and Human Services

Debra E. Gerald, National Center for Education Statistics, U.S. Department of Education

Participants in this presentation reviewed the types of projections done at their respective agencies. The projection methodologies were discussed, including the projection techniques and assumptions underlying the models. Presenters also discussed interaction with other agencies and the methods for dissemination of results to public and other users.

Concurrent Sessions 1

Topic A
Strategic Planning

Lessons from Strategic Planning in Federal Agencies

Chair: Rob Werge, Animal and Plant Health Inspection Service, U.S. Department of Agriculture

Participants: Rob Werge, Animal and Plant Health Inspection Service, U.S. Department of Agriculture

Regina M. Deanehan, Internal Revenue Service, U.S. Department of Treasury

Allan Herlands, Office of The Comptroller of the Currency, U.S. Department of Treasury

Edwin Thomas, Animal and Plant Health Inspection Service, U.S. Department of Agriculture

Panelists at this discussion presented recent experiences of Federal agencies in conducting strategic planning. Each of these agencies has adapted strategic planning models widely used in the private sector to the public sector. The possibilities and limitations of applying such models to the Federal government were discussed as were common lessons learned to date from their experiences.

Concurrent Sessions 1

Topic B
Small-Area Projections

Chair: Kenneth Johnson, Bureau of Economic Analysis, U.S. Department of Commerce

GRAF-FIX

Duane G. Hackmann, Bureau of Economic Analysis, U.S. Department of Commerce

GRAF–FIX, a PC-graphic program developed at the Bureau of Economic Analysis was demonstrated. The package was designed for displaying, reviewing, and updating the OBERS State-level economic and demographic projections.

Small-Area Projections at Bureau of Economic Analysis

Kenneth Johnson, Bureau of Economic Analysis, U.S. Department of Commerce

This interactive session featured a discussion of the work at the Bureau of Economic Analysis in the area of small-area projections. Plans to prepare economic area or county projections were presented. A discussion followed.

Concurrent Sessions 1

Topic C
Forecast Evaluation

Chair: Benjamin Klugh, Jr., National Agricultural Statistics Service, U.S. Department of Agriculture

Useful Criteria to Select Which Forecast or Estimation Method is Better

Benjamin Klugh, Jr., National Agricultural Statistics Service, U.S. Department of Agriculture

At this session, the speaker provided criteria for selecting between two methods of forecasting or estimation. Three new selection criteria were compared to three standard criteria. The results of the analysis suggested a preliminary test approach using the correlation between forecast or estimate errors to select between the new or standard criteria. No universal test was uncovered; however, a preliminary test on the correlation of the forecast or estimation errors improved critical limit selection.

Evaluating Macroeconomic Forecasts

Herman O. Stekler, National Defense University, Fort L.J. McNair

At this session, different measures for evaluating macroeconomic forecasts were presented. The speaker began with the rudimentary mean square and mean absolute errors and u-coefficients and demonstrated the newer procedures. Some empirical results were also presented.

Concurrent Sessions 2

Topic A
Forecasting Techniques

Chair: Joel Cohen, Postal Rate Commission

Traffic Forecasting

Philip I. Hazen, Federal Highway Administration, U.S. Department of Transportation

This presentation had previously been given to State departments of transportation as part of a seminar on Pavement Management Systems. It covered growth of total traffic, truck traffic, and truck loadings on pavement. Truck traffic issues were discussed. Various level of sophistication in forecasting procedures and relationships to population and GNP forecasts were also discussed, along with constraints on overall growth.

Forecasting Postal Mail Volumes

Joel B. Cohen, Postal Rate Commission

Public scrutiny of the budget and product and service pricing activities of the U.S. Postal Service has created an increasing, but as yet unsatisfied, need to develop accurate revenue and volume forecasting models and to determine price elasticities of demand. A model was presented of first-class letter-mail volumes—a set of simultaneous equations—that incorporated a representation of historical changes in rate structure due to introduction of presort discounts and rate categories, and in demand function parameters due to heightened competition in the communications industry.

Concurrent Sessions 2

Topic B
Forecasting and Public Policy

Chair: Scott Campbell Brown, Gallaudet Research Institute, Gallaudet University

Forecasting and Policy Analysis

Teddy Su, Bureau of Land Management, U.S. Department of Interior

This presentation highlighted the necessity of evaluating forecast results in making policy analysis. Dr. Su discussed the importance of data collection, estimation methods, and forecasting techniques in establishing a sound relationship between policy variables and target variables.

Forecasting Age-Related Disability: Ramifications for Public Policy

Scott Campbell Brown, Gallaudet Research Institute, Gallaudet University

This presentation highlighted the policymakers' need for forecasts of the number of disabled persons so they can target those with the greatest needs for service programs. Using hearing impairment as an example, the presentation explored the implications of trends in socioeconomic status and education on disabled-population forecasts themselves and the demand for public programs.

Immigration Policy Issues

Eric M. Larson, U.S. General Accounting Office

This presentation described recent immigration policy issues and an ARIMA model developed to forecast immediate relative immigration to the United States, and why this model was chosen. The results and validation procedures were illustrated, and an examination made of the impact of this work on congressional interest in reforming the U.S. immigration system.

Concurrent Sessions 3

Topic A
Forecast Accuracy

Chair: Henry A. Gordon, National Center for Education Statistics, U.S. Department of Education

Forecast Accuracy of U.S. Public School Enrollment Projections by State

Debra Gerald, National Center for Education Statistics, U.S. Department of Education

William C. Sonnenberg, National Center for Education Statistics, U.S. Department of Education

The forecast accuracy of public school enrollment projections for the 50 States and the District of Columbia was evaluated. Projections were developed using a combination of two forecasting methods with data from 1970 to 1986 to produce five sets of projections. The projections were compared with actual public school enrollments to calculate forecast errors. The mean absolute percentage error (MAPE) was used to measure accuracy. These MAPE's by lead time were analyzed by grouping States according to their enrollment size. Similarities and differences in patterns among States were observed. As expected, short-term projections were more accurate than long-term projections for most of the States. In general, States with the largest enrollment size had lower MAPE's than States with small enrollment size.

The Accuracy of National Population Projections by Age

John F. Long, Bureau of the Census, U.S. Department of Commerce

This presentation discussed the accuracy of national population projections by age. It demonstrated that the accuracy of the Census Bureau's national population projections varied markedly by age. Sensitivity to age was a function of the variability of each component of population change and its relative influence on difference age groups. This presentation quantified those sensitivities and resulting accuracy by age.

Concurrent Sessions 3

Topic B
Econometric Models

Chair: Thomas D. Snyder, National Center for Education Statistics, U.S. Department of Education

The Development of a Small Multicountry Macroeconomic Model

James R. Malley, Economic Research Service, U.S. Department of Agriculture

This presentation discussed the specification, estimation, and simulation of a small multicountry macroeconomic model developed to evaluate the impacts of the current U.S. budget deficit on the U.S. economy. The model consists of six countries (the United States, United Kingdom, Canada, West Germany, Japan, and the rest of the world) with four traded commodities (fuels, manufactures, primary, and services). A small number of structural econometric equations and quasireduced forms were used to describe aggregate demand, supply, and balance of payments for each country. Emphasis was on the forecasting properties of the estimated equations, as opposed to the probabilistic interpretation of the parameter estimates.

Bureau of Health Profession's Econometric Model of the Dental Sector

Gloria L. Bronstein, Bureau of Health Professions, U.S. Department of Health and Human Services

Herbert Traxler, Bureau of Health Professions, U.S. Department of Health and Human Services

This presentation focused on the Econometric Model of the Dental Sector (EMODS), which uses a system of interrelated equations and algorithms to forecast dental-sector expenditures, utilization, and employment at the price level where supply equals demand, under specified conditions and assumptions of future nominal and real economic growth.

Concurrent Sessions 3

Topic C
Forecasting Models

Chair: Michael D. Lehr, Energy Information Administration, U.S. Department of Energy

PCAEO Model

Michael D. Lehr, Energy Information Administration, U.S. Department of Energy

This presentation was an overview of the PCAEO model and discussed a pilot program to distribute the model to the general public. The model forecasts the annual projections of energy supplies, demands, and prices published by the Energy Information Administration in the *Annual Energy Outlook*.

The Treasury Estate Tax Micro-Simulation Model

David Joulfaian, Office of Tax Analysis, U.S. Department of Treasury

This presentation was an overview of the U.S. Treasury estate-tax microsimulation model. It provided a description of the data sources, computer software, extrapolation methodology, and output. The need for such a model stems from the fact that the estate is the primary form of wealth taxation by the Federal government. Further, such a model is rendered indispensable by tax legislation enacted over the past decade, which drastically altered the structure and burden of the estate tax.

Concurrent Sessions 4

Topic A
Forecasting in Federal Agencies

How Long is the Chain?

Chair: Howard N. Fullerton, Jr., Bureau of Labor Statistics, U.S. Department of Labor

Participants: Howard N. Fullerton, Jr., Bureau of Labor Statistics, U.S. Department of Labor

William C. Sonnenberg, National Center for Education Statistics, U.S. Department of Education

Ralph Monaco, Economic Research Service, U.S. Department of Agriculture

Naomi Verdugo, Army Research Institute, U.S. Department of The Army

At this interactive session, discussants traced the uses of projections created by one agency to produce projections in another agency. For example, the Bureau of Labor Statistics, National Center for Education Statistics, and the Department of the Army have used Census Bureau projections of population to produce their own projections.

Concurrent Sessions 4

Topic B
Manpower Planning

Chair: Eileen Collins, National Science Foundation

Supply and Demand of New Science and Engineering Ph.D.'s

Eileen Collins, National Science Foundation

This presentation highlighted the concerns about the need to increase U.S. international competitiveness in the face of a declining college-age population and fears of future shortages of highly trained scientific and technical personnel. The session focused on projections of the supply and demand for new Ph.D. scientists and engineers, by field, to the year 2000 in order to assess potential supply-demand imbalances. A multiple-equation, market-based model was used for projection purposes.

Physician Manpower Planning

Jerald Katzoff, Bureau of Health Professions, U.S. Department of Health and Human Services

James Cultice, Bureau of Health Professions, U.S. Department of Health and Human Services

This presentation focused on selected physician manpower planning models of the U.S. Health Resources and Services Administration that are either in use or under development for health manpower policy planning. The presentation demonstrated the benefits of having more than one type of model available for assessing the adequacy of the projected physician work force.

Appendixes

Conference at a Glance

Wednesday, September 6, 1989

8:30 a.m.–9:15 a.m.	**Conference Registration**
	Plenary Session Hampton Room
9:15 a.m.–9:45 a.m.	**Opening Remarks**
	William C. Sonnenberg Debra E. Gerald Co-chairs National Center for Education Statistics
	Susan Ahmed Office of the Chief Statistician National Center for Education Statistics
	Bruno Manno Deputy Assistant Secretary for Policy and Planning U.S. Department of Education
9:45 a.m.–10:30 a.m.	**Keynote Speech**
	"Program Projection in a Dynamic Environment"
	Major General William H. Reno United States Army
10:30 a.m.–10:45 a.m.	**Morning Break**
10:45 a.m.–12:00 noon	**General Session**

Overview of Projection Activities at Federal Agencies

Hampton Room

12:00 Noon–1:30 p.m.	**Lunch (On Your Own)**

Concurrent Sessions 1

1:30 p.m.–2:45 p.m.	**Topic A**
	Strategic Planning Congressional Room
	Topic B
	Small-Area Projections Caucus Room

Topic C

Forecast Evaluation
Cabinet Room

2:45 p.m.—3:00 p.m. **Afternoon Break**

Concurrent Sessions 2

3:00 p.m.—4:15 p.m. **Topic A**

Forecasting Techniques
Hampton Room

Topic B

Forecasting and Public Policy
Congressional Room

Thursday, September 7, 1989

8:30 a.m.—9:00 a.m. **Conference Registration**

Plenary Session
Hampton Room

9:00 a.m.—9:15 a.m. **Opening Remarks**

William C. Sonnenberg
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Co-chairs
National Center for Education Statistics

Bruno V. Manno
Deputy Assistant Secretary for Policy and Planning
U.S. Department of Education

9:15 a.m.—10:00 a.m. **Featured Speech**

"Importance of Forecasting to Budget Policy"

Dr. Rudolph G. Penner
Senior Fellow
The Urban Institute

10:00 a.m.—10:15 a.m. **Morning Break**

Concurrent Sessions 3

10:15 a.m.—11:30 a.m. **Topic A**

Forecast Accuracy
Cabinet Room

Topic B

Econometric Models
Congressional Room

Topic C

Forecasting Models
Forum Room

11:30 a.m.—1:00 p.m. **Lunch (On Your Own)**

Concurrent Sessions 4

1:00 p.m.—2:15 p.m. **Topic A**

Forecasting in Federal Agencies
Congressional Room

Topic B

Manpower Planning
Cabinet Room

2:15 p.m.—3:15 p.m. **P.M. Get-together**

Hampton Room

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